



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| | | | | |
|--|-------------|----------------------|-------------------------|------------------|
| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
| 09/447,030 | 11/22/1999 | RAINALD FORBERT | AE97/151US | 3281 |
| 7590 | 01/12/2005 | | EXAMINER | |
| MARTHA ANN FINNEGAN CHIEF INTELLECTUAL PROPERTY COUNSEL CABOT CORPORATION 157 CONCORD ROAD BILLERICA, MA 01821 | | | NGUYEN, NGOC YEN M | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 1754 | |
| | | | DATE MAILED: 01/12/2005 | |

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|--------------------------------|-------------------------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 09/447,030 | FORBERT ET AL. <i>(initials)</i> | |
| | Examiner Ngoc-Yen M. Nguyen | Art Unit 1754 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 03 January 2005.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 13-22 and 25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 13-22 and 25 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

| | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____. | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: _____. |

DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on January 3, 2005 has been entered.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 13-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marisic (2,384,946) in view of Fernholz et al (3,939,199) and optionally further in view of Mielke et al (5,656,195).

Marisic '946 discloses a process of producing hydrogel pellets by continuously contacting within an enclosed mixing chamber such as an injector or nozzle mixer, streams of reactant solutions of such concentration and proportions that no gelation occurs within the mixer, but only at some predetermined time after leaving the mixer, and under such conditions of flow that each stream is completely and uniformly dispersed within and throughout the other at the instant of contact. The resultant colloidal solution is ejected from the mixer through an orifice or orifices of suitable size so as to form globules of the solution which are introduced into a fluid medium where

the globules of the colloidal solution set to a gel before they pass out of the medium (note page 2, lines 48-64). Pellets may also be formed by a process analogous to spray drying wherein the gelable solution is sprayed into a drying tower (note page 2, left column, lines 68-72). The fluid medium can be constituted of a gas such as air (note sentence bridging the 2 columns on page 2).

Marisic '946 further disclose that the medium may contain components, which can be dissolved therefrom by the hydrosol (note page 1, left column, lines 17-18).

Marisic '946 discloses that the hydrogel can be produced from a solution of sodium silicate and hydrochloric acid (note Example III).

It would have been obvious to one skilled in the art to select any embodiment among the specifically disclosed embodiments, Merck & Co. Inc. v. Biocraft Laboratory Inc. 10 USPQ 1846.

Marisic '946 further discloses that the fluid medium is maintained at a temperature below the boiling point of said sol. After setting is complete, the hydrogen may be washed, base exchanged, heat treated or otherwise processed to obtain the desired physical and chemical characteristics in the final product (note page 2, right column, lines 14-40). The resulting gel possesses open pores free of liquid, this product is considered the same as the claimed aerogel.

Marisic does not specifically disclose the temperature of the process, however, it would have been obvious to optimize these process conditions to obtain the best results. It would also have been obvious to dry the hydrogel to obtain aerogel since aerogel is desired in the art.

For the step of converting the hydrogel to aerogel, in the event that the above heat treating step of Marisic '946 is not sufficient to convert the hydrogel to aerogel, Mielke '195 can be applied as stated below.

Mielke '195 teaches that silica aerogel particles are desired to be used in moldings (note claim 1). Mielke '195 further discloses that silica aerogel can be produced by solvent exchange, and subsequent supercritical drying a silica hydrogel.

Thus, it would have been obvious to one of ordinary skill in the art to convert the hydrogel of Marisic to aerogel because aerogel is desired to be used in moldings as suggested by Mielke '195.

The difference is Marisic 946 does not disclose that the fluid is moving substantially against the direction of gravity.

Fernholz '199 discloses that for a spray-drying process for converting a sol to a gel, in order to avoid damage of the gelled and still soft particles, they can be sprayed in upward inclined direction and collected in a liquid bath (for example water) or they can be conducted in countercurrent flow with a current of air or gas which reduces their impact velocity and simultaneously improves their resistance by drying. In this manner particles of almost any desired size can be produced (note column 2, lines 23-33).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to use a current or air or gas in countercurrent flow with the spray of silica sol in the process of Marisic '946, as suggested by Fernholz '199 because such countercurrent flow of air would reduce the silica gels impact velocity and improve their resistance by drying.

For claim 20, the subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have used both the water bath and the countercurrent flow of air to avoid damage of the gelled and still soft particles, because combining two or more ways as disclosed in Fernholz '199 for the same purpose has been held to be a *prima facie* case of obviousness, see *In re Kerkhoven*, 205 USPQ 1069.

Claims 13-22, 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marisic (2,384,946) in view of Fernholz et al (3,939,199) and Frank et al (5,7899,075).

Marisic '946 and Fernholz '199 are applied as stated in the above rejection.

The difference not yet discussed is Marisic '946 does not teach the silylating step.

Frank '075 discloses that the term aerogel encompasses xerogels and cryogels (note column 1, lines 12-24). Frank '075 further discloses that it is known in the art to convert gels into xerogels by modifying the gels by silylation in such a way that the gels can be air dried without collapsing (note column 1, lines 54-61).

It would have been obvious to one of ordinary skill in the art to convert the gel of Marisic into an aerogel (i.e., xerogel) by first silylating the gel, as suggested by Frank '075 in order to dry the gel without collapsing the gel structure and because Frank teaches that aerogel is a desired product in the art.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Applicants argue that Fernholz '199 is not analogous art to Marisic '946, therefore, one skilled in the art would not be motivated to combine Marisic '946 and Fernholz '199.

Granted that the sol or gel in Fernholz '199 is not silica as in Marisic '946, however, both Fernholz '199 and Marisic '946 deal with a problem concerning possible damage when converting soft sol into a gel and Fernholz '199 fairly suggests a solution for such problem. It is clear that Fernholz '199 is "reasonably pertinent to the particular problem with which the inventor was concern." In re Oetiker, 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992) (note MPEP 2141.01(a)).

Applicants argue that Fernholz '199 discloses the preparation of a carrier used for supporting the catalyst that is used for the oxyacetylation process.

Fernholz '199 is only relied upon for the process of producing carrier. Fernholz '199 is applied to teach how to minimize damage to the soft sol when converting it to a gel by using a countercurrent flow as stated in the above rejection.

New reference is used for the rejection of claim 25 as stated above.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ngoc-Yen M. Nguyen whose telephone number is (571) 272-1356. The examiner is currently on Part time schedule.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Stan Silverman can be reached on (571) 272-1358. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306.

Art Unit: 1754

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed (703) 308-0661 272-1700.



Ngoc-Yen M. Nguyen
Primary Examiner
Art Unit 1754

nmm

January 10, 2005